

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-31 (Canceled).

32. (Previously Amended) A method of producing an optical-ready substrate on which microelectronic circuitry can later be fabricated, said method comprising:

providing a carrier substrate made at least in part of a first semiconductor material and having a front side and a backside,

by using the first set of semiconductor fabrication processes, fabricating optical signal circuitry on the front side of the carrier substrate designed to provide signals to the microelectronic circuitry to be fabricated thereon at a later time, said optical signal circuitry made up of semiconductor photonic elements interconnected by an optical waveguide for carrying an optical signal characterized by a wavelength of about 850 nanometers or less, and wherein the first carrier substrate comprises silicon; and

creating a top surface above the optical signal circuitry that is of sufficient quality to permit the microelectronic circuitry to be fabricated thereon using a second set of semiconductor fabrication processes; and

sending the optical-ready substrate to a purchaser that will subsequently fabricate microelectronic circuitry thereon by using a second set of semiconductor processes.

33. (Canceled).

34. (Currently Amended) The method of claim 32 wherein ~~the step of~~ fabricating the optical signal circuitry comprises fabricating an optical clock signal distribution network.

35. (Currently Amended) The method of claim 32 wherein ~~the step of~~ creating the top surface involves fabricating an SOI structure.

Claims 36-47 (Canceled).

48. (New) The method of claim 32, wherein creating the top surface involves forming a first semiconductor layer above the front side of the carrier substrate, wherein the top surface is an upper surface of the first semiconductor layer.

49. (New) The method of claim 32, wherein creating the top surface involves bonding an oxide layer of a second wafer to the front side of the carrier substrate.

50. (New) The method of claim 49, wherein the second wafer includes a silicon substrate with the oxide layer formed thereon and where creating the top surface further involves thinning the silicon substrate after bonding the oxide layer to the front side of the carrier.

51. (New) The method of claim 32, wherein the carrier substrate is made of silicon.

52. (New) The method of claim 32, wherein fabricating optical signal circuitry involves fabricating a core made of a material selected from the group consisting of silica and silicon oxynitride.

53. (New) The method of claim 32, wherein fabricating optical signal circuitry involves using silica for the core.

54. (New) The method of claim 53, wherein fabricating the optical waveguide involves doping the silica core with GeO_2 .